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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RIDLEY, BASIA ANNA

ART UNIT PAPER NUMBER

1764

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/779,030

Applicant(s)

BILLIG ET AL.

Examiner

Basia Ridley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-8 is/are rejected.
7) ☒ Claim(s) 19 and 20 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 29 October 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim(s) 19-20 is/are objected to as being improper, because while they are directed to a method, they depend from an apparatus claim 6. Accordingly claim(s) 19-20 has/have not been further treated on the merits.

Election/Restrictions

2. Newly submitted claim(s) 9-18 are directed to inventions that are independent or distinct from the invention originally claimed and examined, for reasons as set forth below.

3. Claim(s) 1-18 are drawn to distinct inventions, as set forth below, therefore a restriction to one of the following distinct inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, drawn to a reactor, classified in class 422, subclass 198.
- II. Claims 9-18, drawn to method for oxidation of ethylene to form ethylene oxide, classified in class 549, subclass 534.

The inventions are distinct, each from the other because of the following reasons:

4. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, such as for another exothermic reaction which does not require introducing ethylene and oxygen into the reaction tubes .

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for any Group II is not required for Group I, restriction for examination purposes as indicated is proper.

7. Since applicant has received an action on the merits for the originally presented invention I, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim(s) 9-18 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Langley (USP 4,847,393).

Regarding claims 1 and 3-5 Langley discloses a reactor and heat exchanger cooler assembly comprising:

- a tubular reactor (1) having a lower outlet head (drawing);
- reaction tubes (2) packed with catalyst within said reactor supported by an outlet end tube sheet (3);
- a tubular heat exchanger (11) an upper end and a lower end and comprising lower end tube sheet (13) supporting tubes (12) within said exchanger (11);
- the upper end of said heat exchanger being integrally affixed to said reactor lower outlet head (drawing);

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- said reactor outlet head having an opening (drawing) for the passage of the reaction gas mixture from the reactor (1) to said heat exchanger (11) and through tubes (12) in said heat exchanger (11);
- wherein said reaction gases are cooled by indirect heat exchange with a heat exchange fluid introduced into said heat exchanger (C4/L6-10);
- wherein the reactor is packed with a supported silver catalyst (C3/L50-52);.

Since the drawing in Langley only shows partial view of the reactor and the heat exchanger, neither the upper inlet head of the reactor nor the inlet end tube sheet of the reactor nor the upper tube sheet of the heat exchanger are shown, but said elements are inherent in the reactor of Langley.

Regarding claims 4-5, while Langley does not show a fluid introduction and removal lines for the heat exchanger, said elements are inherent in the reactor of Langley.

The examiner notes that the term “integrally affixed” does not exclude two units connected by a pipe and other components, such as heat exchanger outer wall, to make a whole system.

Claim Rejections - 35 USC § 102 or 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Langley (USP 4,847,393) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Langley (USP 4,847,393).

Regarding claim 7, Langley, discloses all of the claim limitations as set forth above. Additionally, the reference discloses the various reactor components being connected (see Fig.) by means that appear to be the same as, or an obvious variant of welded connection set forth in the instant claim.

Claim Rejections - 35 USC § 103

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12. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

13. Claims 1, 3-5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langley (USP 4,847,393).

Alternatively, regarding claims 1 and 3-5, if the term “integrally affixed” is taken to exclude any pipe between the heat exchanger and said reactor outlet head, so that the units are welded directly together it would have been obvious to one of ordinary skill in the art at the time the invention was made to integrally affix the heat exchanger to the outlet head of the reactor of Langley, since such modification would have involved making elements integral. Making elements integral is generally recognized as being within the level of ordinary skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). Additional motivation to weld the heat exchanger directly to the outlet reactor head is teaching in Langley, see C2/L61-63, which states that during ethylene oxide production it is preferable that the cooling takes place immediately after passage through the reactor.

Regarding claim 8 Langley discloses all of the claim limitations as set forth above. While the reference does not disclose any specific dimensions of the heat exchanger it would have been obvious to one of ordinary skill in the art design said heat exchanger to have dimensions as recited in rejected claims, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955). Where the only difference between the prior art and the claims is a recitation of relative dimensions of the claimed device, and the device having the claimed dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device, *Gardner v. TEC Systems*,

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Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

14. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Langley (USP 4,847,393), as applied to claim 1 above, in view of Ozero et al. (USP 4,921,681) or Sawada et al. (USP 5,292,904).

Regarding claim 2 Langley discloses all of the claim limitations as set forth above. Additionally the reference teaches that disclosed apparatus is used for production of ethylene oxide (abstract) and that a cooling fluid is used for cooling the tubes in both, the reactor and the heat exchanger (C3/L50-C4/L9), but the reference does not disclose any specific examples of cooling fluid which can be used. Both, Ozero et al. and Sawada et al. teach that reactors and heat exchangers used for production of ethylene oxide can be successfully cooled by water (see Ozero et al. (C3/L6-15) or Sawada et al. (C4/L14-56)). Therefore, use of water as the cooling fluid in the reactor and heat exchanger of Langley would be obvious to one of ordinary skill in the art at the time of the invention, because it would amount to nothing more than a use of a known material for its intended use in a known environment to accomplish entirely expected result.

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Langley (USP 4,847,393), as applied to claim 1 above, in view Sapoff (USP 5,114,685).

Regarding claim 6 Langley discloses all of the claim limitations as set forth above. While the reference does not disclose any specific dimensions of the reactor it would have been obvious to one of ordinary skill in the art design said reactor to have dimensions as recited in rejected claims, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955). Where the only difference between the prior art and the

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claims is a recitation of relative dimensions of the claimed device, and the device having the claimed dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device, *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). Further the examiner notes that tubular reactors comprising at least 20 thousand reaction tubes wherein the reaction tubes have a length of from 15 feet to 40 feet, and an outside diameter of 1 inch to 2 inches were known in the art at the time of the invention, as evidenced by Sapoff (C3/L34-64).

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

17. Applicant's arguments filed on 22 April 2005 have been fully considered but they are not persuasive.

The applicant argues that the instant invention is different from apparatus of Langley which requires a conduit to connect the reactor and a heat exchanger and in which said conduit connects the lower head of the reactor with the lower head of the heat exchanger. This is not found persuasive, because the broad interpretation of term integrally affixed does not exclude two reactor components being connected into an integral whole regardless of number of other components in-between said two reactor components. The term "integrally affixed" does not exclude two units

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connected by a pipe and other components, such as heat exchanger outer wall, to make a whole system.

18. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., limitation of formation of aldehyde) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

19. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Ozero et al. and Sawada et al. teach that reactors and heat exchangers used for production of ethylene oxide can be successfully cooled by water (see Ozero et al. (C3/L6-15) or Sawada et al. (C4/L14-56)). Therefore, use of water as the cooling fluid in the reactor and heat exchanger of Langley would be obvious to one of ordinary skill in the art at the time of the invention, because it would amount to nothing more than a use of a known material for its intended use in a known environment to accomplish entirely expected result..

Conclusion

20. In view of the foregoing, none of the claims are allowed.

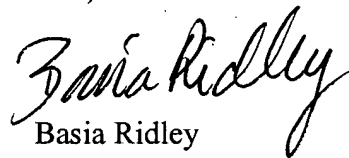
21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Basia Ridley
Primary Examiner
Art Unit 1764

BR
June 27, 2005